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June 2, 1983

cc # 71,014

Raymond C. Nye  
Environmental Protection Specialist  
USEPA, Region X  
1200 Sixth Ave.  
Seattle, Washington 98101

JUN 10 1983

Dear Mr. Nye:

This letter is in response to your letter of April 5, 1983 requesting information on turbine and heater units in the Prudhoe Bay field western operating area permitted under existing PSD permits. These PSD permits are permit number PSD-X79-05 (PSD I), PSD-X80-09 (PSD II), PSD-X81-01 (Waterflood PSD), and PSD-X81-13 (PSD IV). The letter requested the following items:

1. identify units installed or ordered
2. source testing date for permitted units
3. units output ordered matched to the unit output in the permit

The charts attached provide this requested information.

There are some variations to the permits shown in the charts that we believe are within the scope of the application. Therefore, before these items requested are presented there is some additional information that needs to be brought to your attention. This includes some new information to be submitted and the examination of some previous information used for the PSD permits.

First, Attachment A is a February 25, 1980 letter from Radian Corp. that examines the small turbines permitted under PSD II at GC-2. The turbine sizes permitted were 1-1400 HP and 2-3500 HP. However, the turbine sizes installed are 2-2500 HP and 1-4900 HP. This letter examines the emissions for 2-2,500 HP and 1-5,000 HP turbines (similar to the installed sizes) and finds that they will not result in a net increase in emissions. In fact there will be a small reduction in the maximum annual NO<sub>2</sub> concentration of 0.30 ug/m<sup>3</sup>.

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Raymond Nye  
USEPA, Region X  
June 2, 1983  
Page 2

Secondly, the Seawater Injection Plant West (SIPW) and GC-1 sources have been combined in the chart since the SIPW will be at GC-1. The sources in this area (SIPW & GC-1) for small turbines include 3-2,500 HP turbines instead of the permitted 4-4,000 HP turbines. And, the proposed large heaters to be installed are 2-302.0 MMBtu/hr for the 750 MMBtu/hr heater capacity. The 750 MMBtu/hr total capacity was modeled using heaters ranging from 25 to 250 MMBtu/hr. However the proposed units should result in less emissions as shown below:

| <u>Size</u>           | <u>NO<sub>x</sub>, g/s</u> |                                                                                                                                                                                                                                                                       |
|-----------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 @ 4 MHP             | 11.90                      | from Table 3.3 of Technical Note of Air Quality Impacts in Prudhoe Bay Oil Field by Radian-December 3, 1980.                                                                                                                                                          |
| 3 @ 2.5 MHP           | 6.44                       | from Table 1 of Radian's letter of February 25, 1980 (Attachment A), 3 x emissions for 1-2.5 MHP turbine.                                                                                                                                                             |
| 750 MMBtu/hr          | 18.00                      | from Table 3.3 of Technical Note of Air Quality Impacts in Prudhoe Bay Oil Field by Radian-December 3, 1980.                                                                                                                                                          |
| 2 @ 302.0<br>MMBtu/hr | 14.78                      | from Table 4.1 of Technical Note of Air Quality Impacts in Prudhoe Bay Oil Field by Radian-December 3, 1980. It is assumed that the 302.0 MMBtu/hr turbine would have similar emissions to a 310.5 MMBtu/hr turbine, which has NO <sub>x</sub> emissions of 7.39 g/s. |

There are also turbines to be installed at each of the gathering centers which are similar to those permitted but slightly larger, 270 HP larger. These are the 7,770 HP turbines that are to be installed in place of the 7,500 HP turbines. Since these turbines sizes are nearly the same and there is excess small turbine capacity at nearly all of the gathering centers, these turbines should be accepted in place of the 7,500 HP turbines. Additionally it should be noted that the modeling shows a smaller turbine size, 5,000 HP in comparison to the 7,500 HP turbine, results in greater impact than a large turbine (from Technical Note above of December 3, 1980).

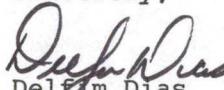
There are several turbines and heaters not listed. The location of these turbines and heaters are presently being evaluated as well as ways of reducing the total horsepower and heater needs. Sealift for these facilities would be 1986 with startup in 1987.

Raymond Nye  
USEPA, Region X  
June 2, 1983  
Page 3

Finally, please recall Michael M Johnston's (Chief, New Source Permits Section) letter of February 22, 1980. This letter states that the resulting permit will specify the turbine size and heat recovery combination that describes the worst case ambient impact scenario. This preliminary determination would indicate that the worst case scenario would be permitted, but the permit can be changed without public comment as long as that variation is within the scope of the application. We believe that all of the variations to the permits shown in the charts are within the scope of the applications.

If you have any questions about these proposed modifications to the permits or need additional information for the attached charts, please call me at (907)564-4127 or Lynn Billington at (907)564-4137.

Sincerely,



Delfim Dias

Sr. Environmental Engineer

LMB/0036M

cc: L. Billington  
Ron Kreizenbeck, EPA-Juneau  
Doug Lowery, ADEC-Fairbanks  
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